

## THE WEATHER IN THE UNITED STATES

## GENERAL CONDITIONS

A warm October (see Chart III), with temperature uniformly above normal—a rather unusual occurrence. Killing frost was less prevalent and did not extend quite so far south as in a normal October.

For the country as a whole, precipitation was a shade greater than normal, and this, too, is unusual. On the northwestern coast there were indications toward the close of the month of the close approach of an oceanic depression of the barometer which is usually associated with generous rains west of the Rocky Mountains. The usual details follow.—*A. J. H.*

## CYCLONES AND ANTICYCLONES

The tracks of 15 low-pressure areas are plotted on Chart II for October. Two of these, I and VI, were of tropical origin, but did not attain hurricane intensity. Two other slight disturbances passed over the Lesser Antilles, the first during the 15th and 16th and the second during the 28th to 31st. The latter pair were absorbed in passing extra-tropical disturbances.

The tracks of 14 high-pressure areas are plotted on Chart I; none of these were important.—*W. P. Day.*

## THE WEATHER ELEMENTS

By P. C. DAY

## PRESSURE AND WINDS

The marked features of the weather during October, 1927, were the widespread excess of temperature, practically all stations reporting monthly means in excess of the normal, and the long period of unusual heat, lack of precipitation, and excessive sunshine that prevailed with but few local interruptions over nearly the entire country from the 14th to 28th.

The month opened with an area of low pressure over the southern Plains, attended by general rains and thunderstorms from Oklahoma and Arkansas northward to the Lake Michigan area, with heavy rains in the middle Mississippi Valley and some near-by areas. By the morning of the 2d heavy to excessive rains had continued in portions of the Mississippi Valley, particularly in Iowa and Missouri; also there were some unusually heavy rains in Texas and Oklahoma, Oklahoma City reporting more than 8 inches during the preceding 24 hours, and general rains had extended to the northward and over the Great Lakes. During the following 24 hours precipitation had generally ceased, though some extension had occurred in the rain area. At the same time a moderate barometric depression had moved northward along the Florida coast, and at the morning observation of the 3d was central over eastern South Carolina, and heavy rains had fallen in near-by areas. This cyclone moved northward near the coast, and on the morning of the 4th was central off the New England coast, and heavy rains had occurred along its path, with lighter rains extending westward into the upper Ohio Valley and lower Lake region.

On the 3d a cyclonic area entered the far Northwest, and by the 4th it had extended eastward into the northern Rocky Mountains, but with decreased intensity; precipitation, which was heavy in a few localities near the coast, was confined mainly to the northern districts from Montana westward. On the 6th low pressure developed

in eastern Kansas and moved rapidly during the following day to Ontario, attended by rather widespread and locally heavy precipitation from the Mississippi Valley eastward to the Atlantic coast, the rains being augmented somewhat on the 7th by a secondary depression in the lower Mississippi Valley. This depression moved eastward to near the south Atlantic coast by the morning of the 8th and to the northeastward off the coast during the following day, attended by some local heavy rains from the North Carolina coast to Chesapeake Bay and by moderate rains in other portions of the Atlantic coast area.

On the morning of the 11th low pressure covered the Plains States, with centers over North Dakota and Oklahoma, attended by rain or snow over portions of the northern States from Montana eastward to Lake Superior. By the following morning important precipitation had occurred over most districts from the middle and northern Plains eastward to the Great Lakes and southeastward to the Gulf and south Atlantic coasts, heavy rains occurring locally from the middle Mississippi Valley southward to Alabama and near-by areas. With the further eastward progress of the storm during the 13th, precipitation continued over the more eastern districts and extended into the Northeastern States, with heavy rains along the Atlantic coast from North Carolina to New England.

After the passing of the storm referred to no important cyclone occurred over the country until near the end of the month, save from the 18th to 20th, when a tropical disturbance approached the Middle Atlantic coast, entering southern New England on the 19th and passing to the lower St. Lawrence Valley on the following day, attended by some heavy rains near the coast and by lighter rains as far west as the upper Ohio Valley and lower Lake region.

After an exceptionally long period covering much of the second and third decades without important precipitation over the greater part of the country, a disturbance appeared over the far Southwest on the morning of the 28th and moved northeastward to the Red River Valley of the North by the 30th, attended by light to moderate precipitation over most of the Rocky Mountain and near-by Plains areas. Over the central and eastern districts this period continued in the main without additional precipitation.

The mean atmospheric pressure reduced to sea level was below normal in all portions of the United States, save in the Rocky Mountain and Plateau regions where it was slightly above normal, and it was below also in Canada. Over the northeastern districts and in the Canadian Northwest the departures were moderately large. Compared with the average pressures for the preceding month they were everywhere higher save in the northeastern districts, where the averages were slightly less than in September.

There were few high winds or local heavy storms, though small tornadoes were reported from scattered points in Texas on the 1st, and from Arkansas, Oklahoma, and Kansas on the following day; otherwise little damage was reported except on the 11th, when a rather severe tornado occurred in the vicinity of Dill, Ark., causing the death of five persons and the wrecking of many homes and damage to other property. The full details of these and other storms appear in the table at the end of this section.

The prevailing winds were not well defined, as might be expected from the rather uneventful atmospheric condition, but they were mainly from southerly points in the Great Plains, Central Valleys, and Northeastern States, from north or northeast over the Southeastern States, and variable elsewhere.

#### TEMPERATURE

The first decade was mainly somewhat cooler than normal over most western districts, but generally warmer in the more eastern, some unusually high temperatures occurring during the first few days over most districts from the Mississippi River eastward. This was particularly the case in the more northeastern districts where the maximum temperatures on the 1st or 2d were in numerous instances the highest of record for October. Beginning about the 13th higher temperatures set in over the West, and there was a general tendency to increasing warmth in more eastern districts until by the end of the second decade they were above normal over nearly all districts, except locally in the Southeast, where on the 19th, particularly in Florida, temperatures were remarkably low, in a few instances the lowest of record for October.

The last decade of the month was remarkable for the persistent warmth, and for almost continuous sunshine, at least over the eastern two thirds. During this period the daily maximum temperatures were in numerous instances the highest of record for so late in the month and over large areas in the central districts constituted the longest period of unusual warmth ever known at that period of the year.

For the month as a whole the average temperature was above normal in every part of the country, save extreme southern Florida, and similar conditions existed in Canada. Over the interior districts the averages ranged from 3° to 6° above normal, and in a few instances they were the highest of record for the month. Chart III of this Review illustrates the extent and uniformity of the temperature variations from normal. The warmest periods of the month were during the first few days over most districts from the Mississippi River eastward; about the 15th to 18th from the Rocky Mountains westward; and from the 19th to 26th in the Great Plains States. Maximum temperatures above 90° were reported on numerous dates in many of the States and they were 100° or slightly higher in the Southwest and locally in a few of the interior States. The maximum reported was 110° in southern California, and 107° was reported from Arizona.

The periods of lowest temperatures were mainly about the 18th to 20th over the Southeastern States, and locally in the Lake region, Ohio Valley and nearby areas, and on the 30th or 31st in the far Northwest and from Pennsylvania and New Jersey to New England. Minimum temperatures were freezing or lower some time during the month at points in all the States save Florida, where no temperatures lower than 34° was observed. Temperatures below 20° were observed in all the northern border States, and they were below 10° at exposed points in most of the western mountains, the lowest observed during the month, 5° below zero, occurred at elevated points in Colorado and Wyoming.

Killing frosts made no important advance into the great agricultural districts beyond what was shown at the end of September, and over nearly all central and many southern districts, where killing frost has usually occurred before the end of October, no injury had yet been sustained by growing vegetation.

#### PRECIPITATION

Compared with the normal, October, 1927, precipitation was deficient over large areas, though most sections had sufficient for present needs and indeed large portions of the central valleys had unfavorably heavy rains during the first half. The latter half of the month, however, was unusually dry, large areas of the central and eastern sections having no appreciable falls during the entire period. As a result, record-breaking periods without precipitation for the season of the year were established locally, though, on account of the excess of moisture in the early part of the month over much of the great agricultural area this lack of precipitation was not particularly harmful.

The monthly amounts from the Carolinas to New England were mainly above normal, and a few sections in the Middle Atlantic coast area had more rain than in any previous October. There were also substantial excesses in portions of the middle Mississippi Valley and locally in Texas. In the far West there was a slight excess of precipitation in Washington and California, as well as locally in Arizona. Over much of California, Nevada, and Arizona, there was practically no precipitation until the 24th, after which it was of frequent occurrence and very beneficial.

#### SNOWFALL

There was little snowfall save in the mountain regions of the West, and here the amounts were usually less than normal. Only traces were reported from the upper Lake region and practically none occurred in New England.

In portions of the Rocky Mountains, particularly in Colorado and Wyoming, there were total falls during the month amounting locally to 2 feet or more, and similar totals were reported from some of the high elevations of the Sierra Nevada.

#### SUNSHINE

The last half of the month had an unusual percentage of clear sky, particularly between the Allegheny and Rocky Mountains, where frequently for many days no clouds were observed and 100 per cent of the possible sunshine occurred.

#### RELATIVE HUMIDITY

The percentage of relative humidity was less than normal in the greater part of the country, as might be expected from the general excess of warmth and sunshine. The deficiency was greatest, 10 to 15 percent, over the Rocky Mountain region, and nearly as great in some of the southeastern sections. There was a slight excess near the upper Lakes and over some of the Northeastern States.